

Competitive Strategies and

Market Scenario

A Study

For

Andersen Consulting

December 1991

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Abstract

This report focusses on the European market for information services. It analyses the different types of company with whom Andersen Consulting competes and provides examples of Andersen Consulting's most significant competitors. The report provides a competitive market scenario for the period up to 1995 predicting possible competitive rankings.

The report recommends that Andersen Consulting adopt a *business operations* outsourcing strategy that will enable it to achieve growth significantly in advance of the industry average rate. The report suggests that the adoption of a *business operations* strategy should be focussed on competing with the in-house information services department. An internal issue for Andersen Consulting would be the shift from a *project* to a more operational or *process* management orientation to support this strategy. This strategy would also require the development of alliances with other organisations necessary for the provision of low-value added technical or operational requirements.



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I Introduction

A Objectives

To prepare a presentation with back-up material that addressed the following:

- analysis of the different types of company that will compete in Andersen Consulting's target markets.
- analysis of specific companies that will be Andersen Consulting's prime competitors.
- an analysis of the implications of the competitive environment for Andersen Consulting and recommended strategies.

This report provides the back-up material to the presentation that was made by Peter Cunningham and Peter Lines at Andersen Consulting's senior partners meeting held at Cap Martin on the 30th October 1991.

B Scope

The study focuses on Europe, but considers the impact of competitive actions outside Europe including the extent of multi-national business and its impact.

Different types of company competing in Andersen Consulting's market include:

- Companies whose principal business is in the software and services market, such as, Cap Gemini Sogeti, the SEMA Group, Computer Sciences Corp, etc.
- Companies owned by other organisations outside the information technology sector such as EDS and Debis Systemhaus etc and the possibility of initiatives in the market by other external organisation.
- The other big six accounting companies, Coopers Lybrand Deloitte, Price Waterhouse, etc
- Computer system manufacturing companies, notably IBM, Digital, Bull etc.
- Telecommunications vendors: AT&T, Nynex, BT.

In examining these company groups, special attention is paid to motivators and likely courses of action. The study looks for commonality and difference of objectives with expected consequences from a competitive view.

The market forces are especially recognised; differences due to geography are identified.

To an extent, Dr Michael Porter's work on competitive analysis is used.

From the competitive analysis, changes in market positions and shares of leading companies are estimated through to 1995. The positions of these companies in terms of market offerings are predicted.

The potential impact of acquisitions is evaluated, particularly for the independents information services firms.

C **Methodology**

The approach used for this study was to conduct desk research based upon existing **INPUT** industry analyses, vendor information and market reports to suggest approaches for Andersen Consulting.

D **Report Contents**

The remaining chapters of this report are set out in the following format:

- Chapter II summarises the key conclusions and recommendations that arise from this study.
- Chapter III discusses the competitive vendor groups and individual vendor examples.
- Chapter IV provides a scenario of market development over the next five years discussing likely vendor developments and other supporting assumptions.

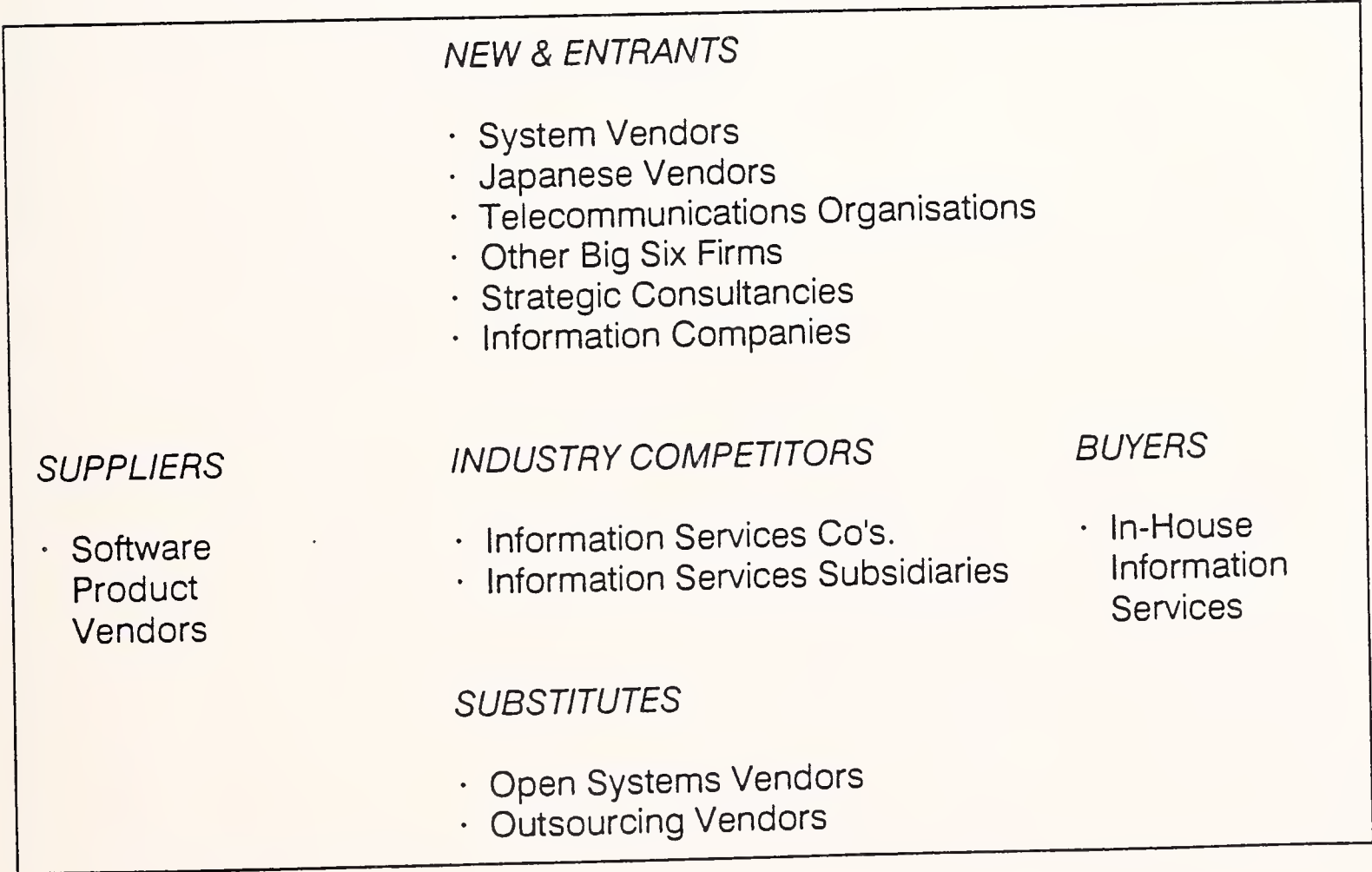
Providing these business solution services represents an even greater opportunity than that for IS outsourcing. In Chapter IV we demonstrate that it is not unreasonable to expect that IS outsourcing could grow at a compound annual average growth rate of 70% over the next five years. The potential for supplying business solution services could be much higher, at least by an order of magnitude, in terms of market size. This kind of growth opportunity is just not available in the market for information services, where growth is forecast to be at the rate of only 15% per annum over the next five years.

The current embryonic state of development of the market for business solution services offers Andersen Consulting the opportunity to establish a leadership position ahead of its competition through an early pre-emptive strike into the market.

The second important concept is that of competitive differentiation, increasingly an issue in an ever more crowded market. In this study the Porter competition factors model has been used as a tool for analysing competitive threats to Andersen Consulting. The competition factors are highly interrelated reflecting the complex and dynamic nature of the information systems and services business. Exhibit II-1 represents a simplified summary of the principal vendor group competitive threats in the IT related professional services business.

Exhibit II-1

Potential Competitive Threats - Porter Analysis Model



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Exhibit II-1

Potential Competitive Threats - Porter Analysis Model

	<i>NEW & ENTRANTS</i>	
	<ul style="list-style-type: none">• System Vendors• Japanese Vendors• Telecommunications Organisations• Other Big Six Firms• Strategic Consultancies• Information Companies	
<i>SUPPLIERS</i>	<i>INDUSTRY COMPETITORS</i>	<i>BUYERS</i>
<ul style="list-style-type: none">• Software Product Vendors	<ul style="list-style-type: none">• Information Services Co's.• Information Services Subsidiaries	<ul style="list-style-type: none">• In-House Information Services
	<i>SUBSTITUTES</i>	
	<ul style="list-style-type: none">• Open Systems Vendors• Outsourcing Vendors	

The impact of substitutes, forces like *downsizing*, *networking* and *outsourcing* are driving service related user expenditure up at the expense of product related expenditures. *Downsizing* and *networking* are manifested strongly through competition from *open systems* vendors. *Outsourcing* vendors take away account control from product and service suppliers. This is presenting a major challenge to system vendors who are having to make radical changes in order to develop fee-earning service and support revenue streams. This has brought the system vendors to mount a serious challenge in professional services project development and systems integration service markets.

Thus the system vendors have become *new entrants* into the market. The Japanese vendors have to be considered as a serious long-term potential threat in these markets as well, albeit that they have only made marginal impact to-date. Other new and potential entrants to the market for IT professional services include the telecommunications organisations, other Big Six accounting firms, and the strategic consultancies and the information companies. Most of these companies are likely to remain serving highly specialised niche requirements and do not appear likely to be able to stake out a leadership position overall.

Software product companies, both systems and applications product vendors, represent a competitive threat as *suppliers* to professional services firms. Software products are increasingly becoming the platforms for solutions, substituting for the systems which are relegated to commodity status in an *open systems* world. This places software product vendors in a powerful position from which to provide professional services.

The existing industry competition comprises not only examples from all the vendor groups already mentioned but the information services companies for whom professional services is their primary business.

A competitive threat is also presented by large *buyers* of information systems and services who can attempt to leverage their in-house skills and resources through external sales. This has been a common feature of the development of the information services industry throughout its history, Debis Systemhaus being the most significant recent example. Even without direct market entry the in-house information services function remains the largest single competitor to the professional services and outsourcing business.

It is through a recognition of this group as the principal competitor that a significant degree of competitive differentiation can be developed. This can be achieved through the recognition that in-house information services organisations are targeted on meeting business needs and goals. Marketing the *outsourcing* of business services to meet these operational business needs provides significant differentiation over information services vendors focussed on technical issues and requirements usually defined by the in-house information service itself.

Today information technology firms can be broadly categorised into three groups:

- Those that are primarily *technology* companies, eg. INTEL, Motorola.
- Those that are primarily *packaging* companies, eg. IBM, Microsoft, SAP AG.
- Those that are primarily *solutions* companies eg. Andersen Consulting, EDS.

The current dynamics of the information technology competitive factors referred to above have caused companies to attempt to move from one strategic group to another. IBM which could probably be referred to in the past as both a *technology* company (albeit largely for its own internal use) and a *packaging* company is attempting to move into the open market both for *technology* (through OEM contracts) and *solutions* through SI contracting and *outsourcing*.

Focussing on competing with the in-house information service department and offering *solutions* to business system needs and operational requirements offers an opportunity to create significant competitive differentiation amongst the *solution* vendors group.

B The Flexible and Devolved Organisation

The pursuit of outsourcing opportunities particularly for those that provide business functions, will require vendors to be responsive and adaptive to rapidly changing client requirements. This will have three principal implications for Andersen Consulting:

- The shift of management skills from a project based orientation to a process based orientation.
- The need to ruthlessly change the organisation as the pursuit of client requirements changes.
- The adoption of an *outsourcing* approach itself in order to support the provision of *outsourcing* services to clients.

Pursuing outsourcing opportunities will imply a significant change for Andersen Consulting, away from its strong project management orientation towards one suited to the management of routine business processes.

However, the need to manage routine business processes will itself take place within a user environment where a premium will be placed on being able to anticipate and respond to ever changing needs. Continuous services and support environments are more unpredictable than the provision of project based services.

In pursuit of these changing client requirements Andersen Consulting will need to be ruthless in continually changing its own organisation structure. Radical restructuring of organisations is likely to be a strong feature of the 1990's for all firms. Organisational forms are likely to embody such characteristics as:

- The empowerment of individuals at all levels of an organisation.
- The creation of small self-managed business enterprises within the organisation that have the capability to respond speedily to changing client requirements.

The development of these organisational characteristics, small local units close to their clients, the flexibility of empowered individuals responsive to client needs, must be fully supported by information systems. This will be necessary to ensure the overall coherence of the organisation and to optimise the local decisions made by the "empowered" individuals within the organisation. These individuals need access to commonly shared information to allow them to operate effectively in this mode through sharing their knowledge and expertise throughout the group.

The third major organisational implication of the development of an outsourcing business is the need for Andersen Consulting itself to outsource services that it considers:

- Are not essential for retention of expertise
- Do not provide sufficient added value.

Outsourcing vendors must adopt the outsourcing mentality themselves. Outsourcing vendors must be responsive to their clients' needs which may imply, at least in the short-term, the necessity of obtaining access to expertise or resources that are just not available in-house.

In the longer term the outsourcing mentality implies the identification of core in-firm competences thus opening up the possibility to gain competitive advantage by outsourcing other activities.

C

Building an Alliance Strategy

In order to achieve higher than industry average organic growth in business solutions services, Andersen Consulting will need to place a strategic focus on building alliances with other vendors. A carefully developed alliance strategy can leverage Andersen Consulting's market position through the extension of its scope of capabilities.

An alliance programme will primarily be required to ensure supply of the lower value added technical and resource components of the prime business services provided. The alliance partners effectively become the subcontractors for the elements that need to be outsourced.

Another important motivation of an alliance strategy is its potential to extend the sphere of influence of the organisation to a wider range of potential clients.

This strategy is being adopted by a wide range of firms in the information technology industry. All of the major system vendor, most notably IBM, leading independent professional services firms like Cap Gemini Sogeti, the Sema Group and CSC as well as software product companies and consultancy companies have entered into a plethora of alliances. There is increasing recognition that, in a fast changing world with ever more complex information system requirements, partners are necessary to provide the solution the clients need, no one vendor can provide the total solution.

The key challenges to be faced in the management of alliances are the protection of the core competences from which the higher value added potential derives and the commercial management of the "business transaction" between the two parties. Clearly considerable management effort needs to be devoted to both these concerns.

An alternative option is to consider acquisitions as a method of enhancing market reach and vertical integration. **INPUT** believes that acquisitions should only be considered by Andersen Consulting where they would add or enhance areas that have been identified as core competences. These would most likely be for some essential technology or technique. It is most unlikely that they would be conducted for the purpose of adding just human resources. Human resources would of course be added through acquisitions where these formed the basis of gaining business solutions contracts from clients.

Some examples of the need for the acquisition of "core competence" related vendors might be for:

- Software Development Technology
- Project Management Systems
- Information Management Systems
- Industry Sector Specific Application Systems.

In contrast the areas most likely to be subcontracted or outsourced by Andersen Consulting would be for the provision of functions such as:

- MIPS Factory (Data Centre)
- Network Services
- Basic code generation programming

III Andersen Consulting's Competitors - Motivations and Directions

As the information technology business makes the change from being product dominated to service dominated so Andersen Consulting is being faced with increasing competition from a variety of vendors entering the information services business.

This chapter classifies these competing vendors into nine principal groups and discusses some of the more significant competitors individually.

Exhibit III-1 identifies these nine vendor groups, the individual vendors discussed and their reference within this chapter.

Exhibit III-1

Vendor Group Analysis

Systems Vendors (A)

- IBM (1)
- Digital (2)
- ICL (3)
- SNI (4)
- Bull (5)

Primary Business Vendors (B)

- CGS (1)
- Sema Group (2)
- CSC (3)

Information Services Subsidiaries (C)

- EDS (1)
- Debis (2)

Telecommunications Organisations (D)

Big Six Accounting Firms (E)

Strategic Consultancies (F)

Software Product Vendors (G)

Information Companies (H)

Japanese Vendors (I)

A Systems Vendors

Equipment manufactures as a group are facing a very difficult period of change in their traditional markets. Customer preference for complete solutions not just computer equipment, the movement towards open systems, severe price competition and consequent margin reduction driven by rapid technology advance are the principal factors.

In the analysis of this group we are principally concerned with the impact of these forces on the dominant system suppliers. Their size, brand image and reputation still gives these dominant system vendors significant marketing leverage. Clearly suppliers lacking critical size are in a much weaker position and will have to adopt other strategies for survival. Already WANG, Norsk Data and AST (Apricot) have either adopted or appear to be adopting an exit strategy from computer equipment manufacturing.

Exhibit III-2 summarises the principal motivating force influencing the major system vendors.

Exhibit III-2

System Vendors - Motivating Forces

- Maintain/improve production economies of scale
- Maintain customer lock-in wherever possible
- Implement solution and services strategies

Maintaining and improving economies of scale for production or assembly is vital for most categories of equipment. Production locations are being shifted nearer to markets for low end equipment as transportation costs outweigh labour cost advantages, for example in the Far East.

Since increasingly equipment can be assembled from externally sourced components and subsystems, product development economies of scale are no longer of great importance to system vendors.

Equipment manufacturers have traditionally created "imperfect" markets for their products through customer lock-in to proprietary architectures. Open systems, through de-facto or de-jure standards such as MS-DOS and UNIX, have broken this mould. The more open the systems then the more perfect the market in which customers can substitute or replace systems much more easily.

It is in the self-interest of dominant manufacturers to attempt lock-in strategies that maintain their imperfect markets wherever possible so as to protect their installed base.

This is really only a viable strategy for IBM and Digital to adopt in certain sections of the market, namely those for:

- IBM 370 architecture
- IBM AS400 architecture
- Digital VAX/VMS architecture.

In order to slow down the erosion of customer "lock-in", system vendors are attempting to establish higher levels of proprietaryness. The most obvious examples of this being the system architectures which represent an attempt to establish some level of uniqueness and competitive differentiation.

The principal motivating factors for system architectures can be summarised as:

- Establish higher level competitive differentiator. This is particularly acute for a vendor adopting an open systems stance. The architecture must attempt not to threaten the implied sameness of the "open" position at the component level.
- Foster brand loyalty through this differentiating factor as for most system vendors this becomes increasingly more difficult to maintain with existing products.
- Provide a convenient and practical marketing device for explaining and communicating the vendor's product strategy.
- Provide suppliers with support for the claim that their products are in fact "solutions" which solve or by-pass the need for integration services.

The bottom line is that system vendors believe that they will generate more revenue at higher margins if they can establish the superiority of their architecture vis-a-vis their competition. Some of the key system architectures announced to date are listed in Exhibit III-3. It is interesting to observe that independent software product vendors are coming into direct competition with system vendors in an attempt to establish this level of uniqueness in the market, Software AG have announced ISA and Computer Associates CA 90.

These architectures can be viewed as primarily a defensive reaction to critical market pressure, the only ones likely to survive are those that can establish some clear benefits to users in implementing business solutions.

The declining fortunes of the equipment revenue stream is motivating system vendors to emphasise the service elements of their business. A considerable proportion of total system vendor revenue is generated from software and services, although it needs to be recognised that the majority of this revenue is generated through remedial maintenance support contracts.

The recognition of the need to generate additional added value through software and services is motivating system vendors to adopt three principal forms of market strategy:

- To attempt competitive differentiation through the extension and improvement of existing support services.
- To emphasise applications solutions most usually through alliances and joint ventures with independent software product companies.
- To adopt a systems integrator role, positioning the company as a contractor for major system development incorporating the principle of multi-vendor support.

Exhibit III-3

System Architecture

Architecture		Vendor	Date of Announcement
SAA	Systems Applications Architecture	IBM	1987
NAS	Network Applications Support	Digital	1988
NewWave	Computing Architecture	Hewlett-Packard	1987/89
OCCA	Open Cooperative Computing Architecture	NCR	1990
Scope	Siemens Cooperative Processing Environment	Siemens	1990
IIE	Integrated Information Environment	Unisys	1990
DCM	Distributed Computing Model	Bull	1991
OSA	Open Systems Architecture	Olivetti	1987-91
OPENframework		ICL	1991

Systems Integration has clearly emerged as the preferred market position for computer manufacturers in response to this change and has thus brought them directly into competition with major software and services vendors for major contracts. IBM, Digital, Unisys, ICL and BULL have all declared systems integration strategies.

The provision of systems integration and other project development services by systems vendors has also brought them into closer cooperation with many professional services vendors. Professional Services companies can provide the people resources that a manufacturer either does not have on board or does not want on board for financial reasons.

1. IBM

Exhibit III-4 summarises the key motivating factors for IBM.

Exhibit III-4

Motivating Factors - IBM

- Obtain higher financial returns than its competitors
 - sustain profitability and growth
- Focus on markets where leadership position/efficiency gives financial edge
- Foster excellence in products/services
- Get out of non-performing markets
- Avoid fragmented markets
- Derive 50% of revenues from software and services
- Create image/reality of partnership with customers

Financial goals imply lowering the headcount, but the pursuit of software and service goals implies the need for more people. Restructuring is therefore an important motivating factor allied to gaining access to people through the development of satellite companies, either as a relationship or through a stake.

IBM is known to be using a "term" employment strategy in the United States. This creates a separate class of employee with fixed contractual terms but without the full set of IBM employee benefits.

IBM's size makes it very difficult to achieve their software and services revenue goals without suffering a decline in hardware revenue.

In Europe the total software and services market is only as large as IBM's total revenues worldwide.

The following comments are relevant to IBM's current market positioning:

- Although IBM is the leading European software and services vendor this still only generates about 30% of their total European revenues.
- IBM only has market leadership in the mainframe sector of the product market.
- IBM does, though, have a strong position in the systems integration business.

Exhibit III-5 summarises the key features of IBM's perceived future direction.

Exhibit III-5

Future Directions - IBM

- Break-up organisation into autonomous financially independent divisions
- Develop leadership in non-fragmented service markets eg SI and systems operations.
- Establish leadership in software product sectors:
 - IBM/Apple object oriented systems
 - Officevision
- Create proprietary interfaces at higher levels than the operating systems.
- Create high-level proprietary architectures for specific industry sectors
- Abandon some parts of the alliance programme to avoid conflict situations

Perhaps the most significant change for IBM over the next few years will be its moves to change itself into a set of independent business units. These moves derive from the fundamental conflict situations faced by the company.

Fundamentally IBM has been a *packaging* company albeit that it has had very considerable technology function (annual R&D budget of the order of \$5 billion) and significant services activities that have supported its "packaged" products.

In contrast other companies have concentrated on primarily being *technology* companies, Intel, TI etc and others, for example Andersen Consulting and EDS have concentrated on being *service* companies.

Historically IBM has avoided fragmented markets, it has sought to control significant market shares of well defined markets, through the establishment of the leadership position of its standard packaged products. It is now attempting to establish significant market position in service markets, notably in systems integration, systems operations and certain software product sectors.

Further it is seeking in some areas to establish proprietary systems at higher levels of systems need, beyond even that of systems architecture, that is at the level of the applications. IBM's initiatives to develop an Insurance Application Architecture (IAA), and a Financial Application Architecture (FAA) are examples of this direction.

As IBM's strategic moves unfold it can be expected that they will set up separate operating organisations to address the separate requirements of the *technology* business, the *packaged products* business and the *services* business. Andersen Consulting are thus likely to find themselves competing with distinct IBM services divisions in systems integration and outsourcing markets.

2. Digital

- Exhibit III-6 shows the principal motivating factors for Digital.

Exhibit III-6

Motivating Factors - Digital

- Return to acceptable financial performance through revenue growth and cost reduction.
 - Reduce headcount in manufacturing and sales organisations.
 - Maintain position as key equipment provider seeking to support significant speciality sectors:
 - High Availability systems
 - Fault tolerance
 - Client/server computing
 - Protect VAX/VMS base
 - Develop RISC/UNIX system position

- Relevant to Digital's current market position are the following:
 - Digitals' service capability in Europe is more advanced in its organisational form, than in the United States.
 - However the major service sector is customer services ie. remedial maintenance.
 - Digital is working to strengthen its Systems Integration and Systems Operations offerings.

The recent Digital/Apple alliance, announced early November 1991, is evidence of Digital's recognition of the need for increasing its spheres of influence beyond its basic proprietary and IBM PC compatible offerings.

Digital's service organisations were formulated into four major divisions in Europe in a re-organisation that took place early in 1991. The four major divisions and their functions are as follows:

- PRODUCT SERVICES (standard support and maintenance services for hardware and software).
- BUSINESS-SUPPORT-SERVICES (organised into 3 business groups).
 - ENGINEERING SERVICES (DECSITE)
 - Planning, realisation, general contracting for:
 - Intelligent Buildings (without construction)
 - Information Technology
 - Environmental Solutions:
 - Computerooms, local and wide area networks
 - Working environment, building controls.
 - NETWORK MANAGEMENT SERVICES
 - Consulting - Implementation - Operation and Management Services.
 - OPERATIONS SUPPORT SERVICES
 - Management Consultancy, Project Management customised solutions for:
 - Business protection services (security and recovery)
 - Facility management
 - Management consultancy and support (DCSS)
complete solutions projects (from consulting to operations support)
 - Communication services (IS).
- SYSTEMS INTEGRATION BUSINESS (Software/Projects)
- EDUCATIONAL SERVICES & CONSULTING.

Exhibit III-7 lists the perceived future directions being adopted by Digital.

Exhibit III-7**Future Directions - Digital**

- Systems Integration and Systems Operations
- Open Systems Emphasis
- Continued relationships with independent "applications" solutions providers:
 - Service/support improvement
- Acquire organisations with strategic fit

Digital can be expected to continue to pursue systems integration and systems operations opportunities aggressively. At the same time it will place increasing emphasis on its open systems capabilities and less emphasis on its proprietary product lines.

Whilst systems integration contracting will address the higher level needs of the market Digital will also need to continue to use distribution channels to emphasise "solutions" oriented approaches at the medium scale and lower end of the market. These channels will be vital for Digital in their provision of applications platforms.

Digital will attempt to provide considerable levels of support to these channel firms in order to strengthen its position with them. One example of increased support and service improvement is that of an electronic store (E-store) concept which has been developed in the United States.

Digital has in the recent past been active in acquiring failing or non viable system manufacturing and marketing operations. In 1990 Digital acquired a majority holding in the Kienzle computer systems business from Mannesmann, and most recently in 1991 the minicomputer operations of Philips and the re-seller activity of Alcatel.

We can expect further acquisitions to be made by Digital in the future designed to have strategic fit to their long-term aims of service business development and increased channel control. The acquisition of a significant third-party maintenance organisation (eg Granada) might be seen as both supporting service expansion and increasing account control.

3. ICL

At the end of November 1990, Fujitsu acquired an 80% shareholding in ICL to make it the leading European information systems supplier within the Fujitsu group. In 1991 ICL acquired Nokia Data resulting in the formation of a group with combined annual revenues of some \$4 billion (1990). It is Fujitsu's intention to float 25% of ICL on the London Stock Exchange sometime before 1995.

Apart from their role as the major European systems vendor within the Fujitsu group ICL's principal motivating factors can be summarised as:

- Recognition of the "dead-end" represented by their own proprietary systems.
- Adoption of open systems as the only viable alternative.
- Enhancement of service related revenue streams.
- Emphasis on specific industry sector expertise as a marketing platform.

ICL faces the same set of issues and problems as all of the smaller traditional systems vendors. Like them it has embraced open systems, and emphasised its commitment to the provision of software and services and engaged in a wide ranging programme of alliances and joint ventures designed to support and extend its position in the market place.

ICL has however differentiated itself with its strategy of industry specialisation. It has particular strength in the UK government sector for historical reasons, it is the leading supplier to UK Central Government, associated departments and UK local authorities where it has over 50% of the equipment installed base. Its focus in the retail sector has made it the world's third largest supplier of retail information systems. For this sector ICL makes the following claims:

- Number one suppliers of retail information systems in the UK with approximately 37% of the market.
- Number one supplier to French hypermarkets and Italian department stores.
- Number one in DIY store information systems in the UK, USA, France and Australia.
- Has 30% of the supermarket scanning market in the USA.

With its recent announcement of a Fujitsu sourced (but ICL badged) ATM it is understood to be trying to replicate its successful retail strategy in the financial services sector.

In addition to the public administration, retail and financial services sectors it also claims to specifically target the manufacturing sector.

To achieve their objectives ICL has adopted an overall strategy that recognises four separate, but related, revenue streams.

- Traditional Business (effectively systems sales now with a strong emphasis on open systems).
- Reputation Business (Consultancy)
- Risk Business (Systems Integration)
- Relationship Business (Customer and computer services).

These four business streams effectively define ICL's future direction for revenue generation over the next few years.

Traditional Business - ICL is strongly committed to open systems, particularly open systems networking. In May 1991, ICL announced its OPENframework architecture and launched its Open Systems Management Centre. OPENframework is a blueprint for distributed computing, and the Open Systems Management Centre specialises in the control of open systems multivendor distributed networks. In the retail sector, for example, ICL has established an open systems platform and buys equipment such as bar code scanners from the most appropriate source.

Reputation Business - ICL has moved into the *reputation* business with the formation of IT Partners. IT Partners employ 50 personnel, and although wholly owned by ICL, offers "arms-length" management consultancy, making use of ICL's expertise in fields such as:

- Quality management
- Human resource management
- Marketing

ICL finds considerable spin-offs from this operation in terms of advance warning of major projects. Of course it will also market IT consultancy services through other parts of the organisation.

Risk Business - ICL characterises systems integration as the *risk* business, and views a lengthy relationship with potential clients as essential to success. A costed PERT analysis is required as a key element in the business approval process for systems integration projects, and this is used to ensure that the project team has sufficient understanding of the client and the requirements. ICL believes that price is seldom a differentiator on large projects; the main attribute sought by the potential client is certainly that the vendor can deliver the required system. The acquisition of ICL by Fujitsu has served to reduce the perceived level of risk in using ICL as a systems integrator.

Relationship Business - ICL's most significant move in this area has been the establishment of a jointly owned independent computer maintenance company with Bell Atlantic based around their existing SORBUS organisation in Europe. Apart from this ICL continues to market services through its branch sales organisation. However, within this area there is not a specific agreed strategy on the provision of services.

4. Siemens Nixdorf Informationssysteme

In April 1990, Siemens acquired a majority of the common stock of Nixdorf Computer AG and began the merger of its Data and Information Systems Group into Nixdorf. On October 1st, 1990 this new unit was renamed Siemens Nixdorf Informationssysteme AG, in which Siemens had a 78% stockholding.

In October 1991 Siemens announced that it planned to acquire the remaining 22% of the stock, 15% of which was held by the public and 7% by the Nixdorf family and related trusts. It requires 95% control under German corporate law in order to be able to enforce its decisions on management as the majority shareholder. The company announced that it had achieved this objective in December 1991.

In the light of continuing losses this move to take full control can be interpreted as the intention to restructure the company. SNI can be expected to undergo significant restructuring during 1992 as it integrates Nixdorf fully.

Siemens has publicly stated that "Data and information technology is one of the core activities of Siemens, the integration of SNI into Siemens will provide it with an adequate capital structure for a competitive market and secure its long-term corporate development. In this way SNI will obtain the same business support and back-up as Siemens' other groups".

In the fiscal year ending 30 September 1991, SNI made a net loss of DM 780 million on revenues down 2% at DM 12.1 billion. SNI revealed a rise of 9% in new orders to DM 13 billion, German orders increasing by 16% to DM 8.3 billion and export orders declining 2% to DM 4.7 billion. Siemens is anticipating, principally due to restructuring, difficult trading conditions in 1992 with a forecast for both higher production costs and product price discounting. At the same time it is predicting a 15% increase in revenues and a 10% increase in orders during 1992.

The over-riding motivations of SNI's management can thus be summarised as:

- Completing the financial restructuring of the company
- Rationalising the product lines and organisational structure to control the cost base.
- Regain customer confidence, particularly outside Germany.

Plant closures and headcount reductions are anticipated now that Siemens has achieved 95% control of the company. Once these objectives have been achieved SNI can be expected to place increased emphasis on acquisitions and alliances as a means of improving its market positioning. It already has very strong ties with Pyramid Technology Corp. and recently announced a new series of machines sourced from them. It is also possible that SNI would attempt an alliance of some form with a significant German based software products company. A rumour that they would bid for SAP AG has been denied. SNI also recently announced an agreement with Tandem's Ungermann-Bass subsidiary for the reselling of its Access/One (enterprise hub network switching architecture) product range.

Siemens' normally cautious management style will be severely tested by their ambition to develop SNI as a key strategic element of their overall business in the increasingly difficult conditions of the computer industry.

5. Groupe Bull

Groupe Bull suffered particularly badly in 1990 from the impact of downsizing, the switch to open systems and fierce price competition. Bull suffered an operating loss in 1990 of FF 3.2 billion on revenues of \$34.6 billion.

In response, Bull developed a Transformation Plan for 1991 and 1992, and began implementing it in November 1990. Its main objective was to re-establish profitability, and it involves a vast restructuring programme and product development acceleration. To implement the restructuring called for in the plan, Groupe Bull made a provision in 1990 of FF 4 billion.

This Transformation Plan was intended to improve the company's operating margin over the course of 1991 and 1992 by more than FF 4 billion, particularly through the following actions:

- Consolidating manufacturing in six key, specialised factories, instead of the 13 that were operated at the beginning of 1990.
- Reducing operational and administrative costs by 10% per year in relative terms, particularly through the reduction of staff not directly involved in production, development, sales or services.
- Concentrate its efforts on key markets where it has a reasonable chance of being competitive - which implies forming partnerships in activities where the company has not reached critical size, as it did in 1990 for the CP8 "smart card" with F-C. Oberthur.
- Reducing headcount. Staff reductions totalling more than 5,000 were made in 1991 which, added to the staff reductions implemented in 1990, accounted for nearly 20% of Bull's personnel. In addition to these steps, and in order to increase economic efficiency, its speed of response and its integration, the company defined new worldwide organisations in 1991.
- A single organisational body is now responsible, at a worldwide level, for product policy and research and development.
- The European subsidiaries (Italian and British) of the American subsidiary Bull HN, and those of Bull SA have come under a single operational authority for the whole of Europe (excluding France but including the Eastern European countries). The purpose of this organisation is to establish appropriate operating structures for the single European market.
- The operations of Bull SA and Bull HN in the Far East were combined under the operational authority of Bull HN.

The ownership structure and attendant organisational problems were resolved during 1991 with the consolidation of Bull HN into the French run company with NEC taking a 4.7% share despite a rearguard action by the French Prime Minister to block the Japanese company's interest. This left Zenith Data Systems (finally acquired in April 1990) to manage all of Bull's PC interest worldwide from US headquarters. It is now believed that Bull may be planning to place Zenith Data Systems' European operation under the control of Groupe Bull and divest the remaining US based operation.

Groupe Bull's current ownership structure is:

- | | |
|------------------|-------|
| • French State | 75.8% |
| • France Telecom | 17.0% |
| • NEC | 4.7% |
| • Public | 2.5% |

Groupe Bull is now involved in yet another French Government plan to create a major technological corporation based on the model of Siemens and the major Japanese electronics companies.

The first part of this grand strategy is the formation of Thomson CEA, an organisation that would combine Thomson's Consumer electronic and semiconductor interests with the civil nuclear activities of the Commissariat à l'Energie Atomique (CEA). Toshiba has been cited as a role model for this combination.

The second part of this strategy is expected to be an increase in France Telecom's stake in Bull to create a computer/communications conglomerate. France Telecom's profits would be directed to absorbing Groupe Bull's losses.

There is understood to be considerable animosity in France Telecom towards this strategy of further involvement in Bull.

For some time there has existed a plan to transfer Groupe Bull's communications business to France Telecom which has not yet been completed due to a failure to agree upon the value of the business.

Another factor likely to cause problems in the implementation of this strategy is the attitude of the European Commission towards this development.

Groupe Bull's future direction will be influenced by these grand government strategies. At the marketing level the direction of the company is determined by the following strategic initiatives:

- The development of modular client-server architecture that incorporates and integrated *open systems* capabilities.
- A *solution* strategy targeted at building up applications capabilities in specific industry sectors.
- A *systems integration* strategy targeted at major project contracting opportunities.

- A *partnership* strategy with information services vendors to support the needs of the solutions and *systems integration* strategies.

Bull announced in March 1991 its Distributed Computing Model (DCM), which defines the future architecture of their product offer and provides integration and complementarity between GCOS and UNIX and MS-DOS systems. To put this architecture into practice, Groupe Bull launched in 1990 a special FF 11 billion (\$2 billion) development programme over a period of four years.

Bulls' *solutions* strategy is based on placing increasing emphasis on industry markets. It considers its key markets to be:

- manufacturing
- finance
- retail and distribution
- public sector.

Groupe Bull is keen to develop its partnerships in software and services to serve these sectors. In January 1991, Bull established the Market and Application Development Group for the development and management of industry solutions in its key markets.

Bull's organisational structure for *systems integration* is based on a matrix management concept in order to attempt to utilise its technical strengths optimally. SI Business Units (SIU's) have been set up in France, Germany, the UK, Italy, Benelux, Scandinavia and the US. SIU's do not have engineering (systems development) resources assigned to them, but actually subcontract with the Groupe Bull Project Management/Engineering Centres (PME) for the needed resources to accomplish the systems integration task. The PME Centres are located in the UK, Italy, France, Germany and the US. Italy has possibly the most highly developed systems integration unit within the company; the German operation is concentrating largely on new business opportunities.

Bull's successes to date in this area have been in the government and banking sectors. Two areas of technology focus are *secure networks* and *image processing*.

Bull's *partnership* strategy is focussed on developing alliances with a limited number of key vendors with which it can establish a long-term relationship. Bull anticipates working jointly together in R&D projects as well as in joint marketing activities. Some major Groupe Bull partnerships are listed in Exhibit III-8.

Exhibit III-8

Typical Group Bull Partnerships

Country	Partner Firm
UK	Logica British Telecom SD-Scicon Nucleus Technology
France	Andersen Consulting CAP Gemini Sogeti SEMA
US	Deloitte Touche Nordata

B
Independent Computer Services Vendors

Participants in this group are independent companies whose primary business is that of computer services, primarily professional services. Companies whose primary business is based upon the provision of software products are excluded, these are identified as a separate group, see Section G. Companies whose primary business is the provision of *information* are separately discussed in Section H.

Intensifying industry competition, the arrival of new entrants or the fear of potential entrants (eg. the Japanese vendors), the emergence of new service solutions (eg. Outsourcing as a substitute force) are all conspiring to place immense pressure on the traditional companies whose primary business is software and services.

As these *independent* companies have grown rapidly during the last decade. They have increasingly come up against the increasing need for financial capital and an increasing need for higher level management skills and strategic direction.

For the major companies the significant challenge has become the achievement of critical size on a world scale. Senior executives in these firms believe that a major position in the market must be achieved, measured by size, geographic coverage and prestige to sustain competitive positioning amongst leading user organisations.

The "critical size" factor in terms of its competitive pressure can be summarised in the following way:

- **LARGE** firms compete on the scale and depth of their expertise and can achieve strength through diversity.
- **MEDIUM** sized firms are just not big enough to offer the same depth of skills across a broad range of services as are the large firms but they tend to have similar overheads and cost structures - eg, Datalogic, Engineering Informatica.
- **SMALLER** firms can compete on cost.
- **NICHE** firms compete on high competence in a narrow sector.

There exists a tendency for concentration at the top and fragmentation at the low end. Medium sized firms are squeezed in the middle.

The appropriate size of an organisation will be a function of the particular objectives chosen or forced upon them by their competitive position.

For example the SEMA Group seems to have slipped into the second division in comparison with CGS and needs alliances to secure a flow of business from its traditional customer base. This has motivated the formation of a joint-venture company with British Aerospace, BAe SEMA.

For all vendors, but particularly the smaller ones, alliance strategies are thus increasing in importance particularly with the system vendors whose marketing influence still remains very strong.

Most software and services companies just do not have a sufficiently strong image in the market, they have not managed to attain awareness, in the boardroom and amongst senior management, of their capabilities. It is increasingly important to get access to the ultimate decision makers for information systems decisions, particularly for major system integration projects and of course major outsourcing decisions. The only *independent* large professional services firms to have achieved a strong market position and image are Cap Gemini Sogeti (particularly following the significant shareholding taken by Daimler Benz through its Debis subsidiary) and CSC, although CSC's image remains relatively weak in Europe.

1. Cap Gemini Sogeti

CGS is at a vital stage in its development. It has throughout the 1980's implemented a highly successful strategy based upon the following key tenets:

- Strong emphasis on *professional services*, an emphasis on not owning equipment or products to provide services, and *product independence*.
- Branch structure, lean HQ function with strong financial controls over autonomous branch structure.
- Careful acquisition of good quality companies at realistic prices to develop global (and particularly pan-European presence).

It is now being motivated by a need to re-evaluate and change this strategy as market conditions change and as CGS's position has changed within the industry.

Firstly, the emergence of the Systems Integration market challenged CGS's branch structure and the operational *body shopping* approach to professional services of many of CGS's branch managers.

Systems Integration contracts have raised the *risk* stakes for CGS with implications for higher levels of financing.

Questions such as the acquisition of equipment for clients during project development and the on-going opportunity for systems operations are challenging CGS's antipathy to equipment ownership.

The demand by clients for solutions of increasing applications complexity is driving the need for *applications products* as platforms for solutions.

This tendency is creating a schism in the applications software products market between:

- On the one hand mass market standard products (typically for desktops and/or for utility functions) that are not customised in general, eg. spreadsheets. word-processing, graphics etc.
- On the other hand specialised applications packages that embody substantial functionality. These *kernels*, modules or entire products which in theory could run "as is" are increasingly needed as the platform upon which to deliver a cost-effective *unique solution* to a client.

CGS's "product averse" philosophy is challenged by this development.

The principal motivating factors for CGS are listed in Exhibit III-9. CGS is strongly oriented towards achieving global positioning. It is needing to be accepted in the boardroom, amongst senior executives as one of the leading information services vendors. The ambition to become a global player is making stronger financial demands on the company. The infusion of funds from Daimler Benz may assist CGS to return to the acquisition trail particularly in the United States. Entry to Asian, and more particularly Japanese, markets is probably dependent upon an alliance with a Japanese independent services firm.

Exhibit III-9

Motivating Factors - Cap Gemini Sogeti

- Establish global positioning
 - Obtain access to additional financial resources
 - Change management approach to Professional Services
 - Maintain product/technology independence

CGS is also strongly motivated to move away from the *body shop* mentality of its branch organisation that served it so well in the 1980's. The challenge now is to create a management cadre attuned to major *responsibility* projects over longer timescales.

CGS is likely to remain independent of specific hardware or software products.

At a strategic level, CGS is intent on being one of the major information services vendors that can truly operate on a worldwide scale.

It is believed to be actively seeking partners (Daimler Benz was the first of these) that can leverage its position in terms of financial strength, global reach and management credibility.

It has set up the CGS University outside Paris and embarked on an internal management skills development and training plan. This is believed to be directed towards changing the whole management and branch culture to meet the new demands of higher level responsibility project contracting and service support.

It is expected to continue to develop its *centres of excellence*, units that support the entire organisation with some particular specialist skills and to allow these to be communicated and shared through an advanced bulletin board system.

It has embarked upon a plan to leverage Hoskyns' systems operations experience throughout continental Europe.

The other major direction for CGS is that of management consulting formalised into the Gemini Consulting business group formed out of the acquisition of the MAC Group and United Research, concerned respectively with *strategy* consulting and *change management* consulting. This development is clearly seen as a necessary step to drive *downstream* information services business.

2. Sema Group

The Sema Group is one of the leading European professional services vendors formed from a merger of the French services company Sema Metra and the UK-based Cap Group in 1988.

The Sema Group's position is based principally on significant presence in both the French and UK markets and not on a wider European coverage as is the case with CGS. Although the Sema Group have ambitions to rectify this situation, for example to be within the top 5 vendors in Germany, they appear to have abandoned any hope of operating outside Europe.

Other significant motivating factors include:

- The fact that CGS has a 27.72% shareholding held as a blocking position to its possible acquisition. This must have a restricting impact on Sema Group's management. CGS's own financing needs may lead them to liquidate this, however, unless they can convert their position into a complete takeover.
- A recognition of their 'second rung' status that is impacting them in their ability to obtain prime contracts in the defence sector, one of their key markets.
- A need for software products that support their ability to offer *integrated solutions* in the market.
- A realisation that future significant growth will only be obtained through the acquisition route. This in turn raises the need for additional finance.

The principal strengths of the Sema Group can be considered to include the size of its professional services capability allied to significant positions in the retail banking, defence - and to a lesser extent - the manufacturing sector.

Allied to this professional services capability is expertise in system development methodologies and tools. The Sema Group has developed the Concerto software engineering workbench (launched in 1990) for the support of real-time design methodologies in the defence sector, and Principa an analogous product for commercial applications. The Sema Group is heavily involved in the development of *Master Strategy* and *Master Plan* methodologies for designing information systems, in the development of the *Merise/2* design and in the second phase of the *Euromethod* project which aims to establish an internationally accepted approach to business application development.

In the retail banking sector Sema Group has amongst other interests a 50% stake in CASE 24 Ltd one of the largest worldwide vendors of plastic and verification software systems. Alliances have also been developed to protect their position in the defence sector, Dowty-Sema Ltd and the recently formed BAe SEMA. In the manufacturing sector the company's principal supporting product is I-line, a range of integrated industrial applications that is being developed to support co-operative processing. I-line was obtained through the acquisition of ADV-Orga in Germany.

The Sema Group's weaknesses relate fundamentally to its 'second rung' status in the industry. Although it has significant technical skills it just does not have the size and depth of financial resources to handle major systems integration contracts in the defence sector. Consequently it has formed joint ventures (eg. BAe SEMA with British Aerospace) to ensure its access to substantial subcontracting business.

The development of alliances can be expected as a significant feature of the Sema Group's future direction. In addition to the examples quoted above, Sema Group has a significant relationship with IBM particularly in France for representing the manufacturing sector and in a joint venture company Axone for systems operations and disaster recovery services.

In addition to an alliance strategy the Sema Group can be expected to continue to look for acquisitions and possibly merger partners as it attempts to develop its geographic coverage and strengthen its industry-specific support capability with software products that can be used as the basis of *solution* contracts.

3. Computer Sciences Corporation

Computer Sciences Corporation (CSC), although one of the largest independent professional services companies in the industry worldwide, has not developed a leading position in Europe. With revenues of \$195 million it only ranked in 45th position in 1990 in the European information services market. CSC fiscal year 1991 revenues at \$204 million were 39 percent up over the prior year's \$147 million.

CSC is thus an example of the type of US vendor that has not been able to replicate its prestigious position in its home market within Europe. ADP and Boeing Computer Services would be other examples.

From the mid 1980's CSC declared that it was going to lower its overall dependence on the defence sector (in Europe through NATO) and address the commercial sector through a policy of acquisitions. Its most significant acquisitions in Europe have been:

- CIG-INTERSYS in Belgium in 1989, a company providing both processing and professional services and INFOREM a UK based systems integration consultancy.
- Moria Informatique (1991) and Butler Cox (1991) to add to its INDEX Group activities and thus extend its IT related management consultancy capabilities.

The acquisitions programme has not been sufficiently aggressive to propel CSC to a leading position in Europe and its organic growth has been stymied by difficulties in developing its systems operations business, another targeted area. It sold out from its joint venture company in Belgium, CEGEKA, and ran into difficulties in the UK with some initial outsourcing contracts, notably the Merseyside Regional Health Authority. A major challenge for CSC is the difficulty of changing its 'Pentagon' culture to that of the commercial world. Even its much publicised outsourcing contract with General Dynamics is an example of a relationship with another major defence contractor with whom it shares cultural similarities.

During 1990 CSC Europe restructured its five independent business units into a single networked organisation which numbers 1,800 employees.

CSC's strategic future direction in Europe can be summarised as obtaining a significant market position in Europe through:

- Developing an IT related management consultancy position to provide *McKinsey-like* market coverage.
- Building a commercial systems integration and professional services business to provide *Andersen Consulting-like* market coverage.
- Creating a commercial systems operations (outsourcing) business to provide *EDS-like* market coverage.

C Information Services Subsidiaries

A continuing feature of the development of the information services industry has been the entry of in-house information services organisations into the market, in the Porter model analysis, market entry from the buyer group. The most recent significant example of this being the arrival of Debis Systemhaus, the Daimler Benz information services company, into the open market. Debis Systemhaus has underlined its strategic ambitions by taking a 34% stake in CGS with an option to take full control at a later stage.

In addition to Debis Systemhaus the only other significant vendor in this group is EDS, which is included because of its ownership by GM, rather than its provenance.

The significance of EDS and Debis Systemhaus as potential competitive threats to Andersen Consulting is considerable because each has considerable scale when their total combined captive and non-captive businesses are taken into account.

Many of the other *subsidiary* organisations present in the market are considered individually to present no strategic threat to Andersen Consulting in their current form. They are generally typified by the following characteristics:

- Their original business mission tends to derive from gaining a short-term tactical advantage through leveraging in-house skills or capabilities.

- Conflicts of interest between in-house and external market requirements are difficult to resolve and frequently the company is then split off as a totally independent unit, often with a significant element of management buy out. ITNet and ISTEL were created in this way. However, it needs to be recognised that collectively these companies could represent a threat.

INPUT's conclusion is that the motivations and directions of this group of vendors are only of real direct competitive significance to Andersen Consulting in respect of EDS and Debis Systemhaus which are discussed separately below.

It should however be recognised that a continuing trend towards outsourcing in general will fuel the arrival of new entrants to the market from the ranks of in-house information services organisations. Few of these, if any, are likely to be able to present a competitive challenge on the scale of EDS without significant acquisitions or alliances, such as that between Debis Systemhaus and CGS. The Japanese service organisations of the major industrial groups (Keiretsu) may however be a factor to take into account within the next few years.

1. EDS

EDS was founded in 1962 and became an independent subsidiary of General Motors in 1984. In their last complete fiscal year GM accounted for approximately 53% (\$3.2 billion) of their total worldwide revenues of \$6.1 billion.

EDS's heritage outside of GM and the strong competitive and management principles bequeathed to them by Ross Perot determine the observed motivations and directions of the company. These can be summarised as:

- The development of long term *business* relationships with clients to provide a full range of information systems needs.
- The gaining of competitive advantage by supporting client information systems operations through an efficient network of data centres.

EDS's strategy and direction is of particular significance to Andersen Consulting because it combines the emphasis on business services and business partnership with a vertically integrated strategy for supporting and servicing its clients.

EDS marketing documentation and internal literature emphasise the building of business relationships and the determination of business needs as the justification for information systems. INPUT believes that this is likely to be a winning strategy.

The argument for being vertically integrated is less clear given the pace of change in information systems and the need to provide "best of breed" in terms of both systems and software products to serve clients needs fully and effectively. The sheer scale of EDS's operations may enable them to succeed in this strategy in the short term, but is possibly an impediment in the longer term.

2. Debis Systemhaus

Debis Systemhaus was founded in 1990. It is a wholly owned subsidiary of Daimler-Benz Interservices (Debis) AG, which is a division of the Daimler-Benz group.

In July 1991, Sogeti and Daimler-Benz announced that the German group would be taking a 34% stake in Sogeti (parent of Cap Gemini Sogeti, Europe's largest professional services vendor). As part of this alliance the two companies will form a joint venture in Germany with Debis Systemhaus holding 51% and CGS 49%. Debis Systemhaus is currently organised into five business areas:

- Computer/Communication Services (for computer centres, communication networks and decentralised systems).
- Business Systems and Projects (solutions for planning and management).
- Industrial Systems and Projects (standard solutions for construction, manufacturing quality and security).
- GEI - Gesellschaft für Elektronische Informationsverarbeitung (production automation and IT security for products as well as software development.)
- Training (products and application orientated education).

The motivations and expected future directions of Debis Systemhaus need to be examined from the Daimler Benz perspective. INPUT believes that the key motivating factor behind the formation of Debis Systemhaus was the need to find higher growth markets to expand into, markets with more potential than aerospace and vehicle manufacture. Another motivation for Daimler Benz would have been the perceived need to secure critical information technology skills within the group.

From the perspective of the information services business it is difficult to conclude that Debis Systemhaus's entry (including their stake in CGS) is anything more than an acquisition strategy. Debis Systemhaus do not appear to be coming to the market with any unique approaches, either for applications development or some new strategy for meeting client service needs.

Debis Systemhaus may however, through its prestigious Daimler Benz ownership, help break-down German resistance to outsourcing and thus help to drive the systems operations business in Germany. This would be a real contribution.

The future direction of Debis Systemhaus is expected to be dominated by further acquisitions to expand the scope and depth of its business. In addition to the stake in CGS, Debis Systemhaus has also recently acquired:

- The Diebold Group (IT skills training and consultancy)
- Orgasoft (logistics systems)
- Systemhaus Curadata (tax accounting software).

D Telecommunications Organisations

The telecommunications organisations (TELCO) group can be considered as comprising three groups:

- The European national PTO's that with some exceptions (eg Finland and Italy) have had monopoly positions in their own countries. These organisations, particularly the Deutsche Bundespost Telekom (DBP), have been historically conservative and bureaucratic and have embodied a sense of duty to the "national good", supplying a vital service to an entire country on a utility basis and sourcing exchange equipment from national suppliers.
- The US telephone companies, AT&T and the Regional Bell Operating Companies (RBOCs) that have been freed during the 1980's to pursue the development of information services business abroad. This has manifested itself through the acquisition of independent information services firms, eg. AT&T's acquisition of Istel and Nynex's acquisition of BIS. They have also developed multiple joint-ventures and consortia in new technology areas such as cable services and mobile communications.
- Other companies with telecommunications related operations. This group would include GE Information Services, INFONET, and cellular telephone franchise holders like Vodafone as well as telecommunications equipment manufacturers like Motorola, Racal and Alcatel. The equipment vendors principal thrust has been in supplying the infrastructure and terminals required by service operators and their subscribers.

The principal challenge for all of these organisations has been to address the rapidly expanding market for data services that has occurred within an increasingly deregulated environment.

Historically the conservatively managed European PTO's have provided a utility service both to consumers and to commercial users but showing little difference in their treatment of these two groups of customers.

The European PTO's have generated revenues largely from the provision of services with some revenue generated from the rental of equipment, (until recently it was impossible to purchase telephone equipment from many European PTO's.) Consequently this has given management an operational rather than a project orientation in terms of the culture of the organisations.

Although PTO's have developed some general service capabilities (eg, France Telecom's Telesystemes subsidiary, British Telecom's Customer Systems Division) their principal motivations and directions lie in growing their share of the data transmission services business.

Consequently BT's Syncordia initiative is a primary strategic initiative in which it is trying to establish, from an American base, a global communications network capability in partnership with NTT and the DBP Telekom. Currently this initiative has not been successful due to problems over the *share* of ownership of Syncordia. NTT, DBP Telekom and France Telecom are believed to be planning a rival venture.

In putting together international consortia of this type the telecommunications organisations are aiming to compete with companies like INFONET (in which many PTO's have a stake) and GE Information Services in the market for value added services.

INPUT does not expect the telecommunications companies to represent a significant competitive threat to Andersen Consulting. The telecommunications services operators will be directing their energies towards two strategic goals:

- Protecting their base bearer-system revenue stream for as long as possible. Their natural "utility model" monopoly is increasingly threatened by new technology - the threat of *by-pass*.
- Developing revenues from the rapidly growing demand for value added services through the development of sophisticated network management systems.

The telecommunications equipment manufactures prime direction will be the supply of infrastructure and associated products not the support of clients' applications.

These companies are well placed to meet clients' network management and network services outsourcing requirements. They are not well placed to meet clients' applications needs.

E The Big Six Accounting Firms

The overall goal of the management consulting practices of the Big Six accounting firms has been to participate in and exploit new opportunities for generating fee income and increasing the financial return for their partners.

Whilst all Big Six firms have targeted strategic management consultancy (competing with McKinsey etc) only Arthur Andersen (Andersen Consulting) shifted into providing a full set of IT related professional services, particularly systems development, in a really significant way at an early stage in the development of the IT professional services market.

Andersen Consulting, has been significantly more successful in achieving business development in information services markets than other Big Six firms. This can be seen from the comparison of organisation size given in Exhibit III-10.

Exhibit III-10

Big Six Accounting Firms - IT Related Consultancy

	\$ Millions Europe 1990
Firm	Estimated IT Related Management Consultancy Services Fee income
Andersen Consulting	700
Coopers & Lybrand Deloitte	150
Price Waterhouse	140
KPMG	120
Ernst & Young	100
Touche Ross	70

Subsequently the other Big Six firms in Europe have attempted a "me-two, me-three" Andersen Consulting strategy of moving into IT consulting services, particularly those related to the development of systems integration contracting, but with less success.

A major challenge for all of the Big Six firm's information systems practices remains that of handling their relationship with their audit partners. The partnership concept is also likely to come under strain within an information systems practice where performance disparities between different groups become apparent.

The demand for capital to finance the growth of the business will also be a major issue. High capital requirements are increasingly a feature of the business of developing and operating major client systems.

The constraints of the partnership organisation and capital investment are likely to result in an increasing emphasis on high-level consultancy and the *outsourcing* of those service elements that Big Six firms will not be willing or able to provide themselves.

F Strategic Consultancies

Information systems have become ever more central to the operation and administration of an organisation. Consequently strategic consultancies like McKinsey and Booz, Allen & Hamilton have recognised the need to not only help their clients formulate corporate strategies and implement organisational change but to assist in implementing the information systems developments that result.

Thus just as some of the information industry vendors have moved upstream into management consultancy, so have strategic consultancies moved downstream into information systems implementation. The following are some of the key examples of this trend:

- Booz, Allen & Hamilton started an Information Systems Group now believed to number in excess of 200 consultants worldwide.
- McKinsey purchased ICG from Saatchi & Saatchi (200+ consultant in US).
- The UK based PA Consulting Group acquired Pugh-Roberts Associates, a Cambridge, Massachussetts high technology strategy consultancy.

The key motivations of these firms in respect of their information system practice developments is both the defense of their existing client base and the desire to extend their business opportunity. If information systems are indeed key sources of strategic competitive advantage then strategic consultancies must understand them and be able to provide their clients with relevant services. If they don't they will loose out to other groups of competitors. IT related investment represents a significant proportion (in excess of 20% in Europe) of total investment by organisations.

Like the information systems practices of the Big Six accounting firms it is unlikely that the major strategic consultancies will want to venture far from the provision of high level consultancy services. They are motivated by a need to retain an image of independence and a flexibility to respond to high level management challenges rather than to become too involved in operational and implementation work.

This group does not therefore represent a major competitive threat to Andersen Consulting's principal business areas.

G Software Product Vendors

Equipment *downsizing* and severe price competition have propelled a number of software product companies into a very significant position in the industry. Software products determine the use of computer systems and together with attendant support services command an increasing proportion of user expenditure.

The challenges facing software product vendors vary according to their mix of products between systems and applications software and the types of platforms and markets that they address. Key challenges for software product vendors include:

- Tracking and implementing new technology and new functional requirements.
- Responding to market demand for supporting services.
- Meeting the financial demands to support new development .

With the rapid acceptance of *open systems*, equipment *downsizing* and the proliferation of network based systems requiring client-server models the pressure is on software product companies to extend their potential market to these new opportunities. Going to *open systems* provides *future-proofing*, the avoidance of the situation of being left on extinct platforms.

The acceptance by the market of a systems software *architecture* can place the vendor in a very powerful market position. This is notably the case with Microsoft's de-facto standards, MS-DOS and Windows. Computer Associates' initiative with CA90 is an example of an attempt to increase market control through the establishment of an architecture.

Potentially software product companies can wield a powerful competitive position in the industry through ownership of products and intellectual property rights. Professional services firms can counter this by securing product and intellectual property rights themselves to provide uniqueness in their offerings. Ownership of applications software products that encapsulate vital unique industry functions that can be replicated to offer attractive cost effective solutions, are a key to success for professional services firms.

Software product vendors also have to track the new functional requirements of users, both for systems and application product solutions. The history of the industry has been one of a continuous shift from user self-developed software towards productisation at higher and higher levels of systems and applications functionality.

Thus we observe system software vendors seeking to acquire industry knowledge and expertise in order to build on their software technology platform. For example Software AG's challenge in moving into the applications area with the PRODIS and OMNIS products.

The need to move into new product areas and onto new equipment platforms also emphasises the need to secure distribution channels for the software vendor's products. Some examples would be:

- QSP with IBM
- PAXUS with IBM
- Ross Systems with Digital
- SAP AG with Siemens.

The development costs incurred for new software products, or even their conversion to new equipment platforms are considerable. For example, SAP AG are having to invest DM 300 million (\$150 million) to convert their key R2 mainframe product to a co-operative processing model. It is understood that they are one year late in its implementation at the time of writing (December 1991).

The increasing costs of development are forcing the industry to consolidate. Computer Associates is a key example of a company that has placed high priority on generating cash to finance both development and acquisitions. They have put in place a powerful infrastructure for funnelling newly acquired products to the market and thus establishing barriers to entry for their potential competitors.

An approach that has often been used to ameliorate the need for development finance has been to seek user *development partners*. Many major systems and application product initiatives have had their origin in this kind of situation.

The increasing complexity of products and client requirements is driving software product vendors into a higher level of involvement in implementation and other support activity. This is leading to the generation of an increasing proportion of professional services revenues for these firms and bringing these companies into competition with professional services firms.

Historically software product and support revenues at an industry level mapped out at 85% to product licenses and 15% to professional services. That ratio is now 70/30 at an industry level and could reach 60/40. Some individual vendors ratios are more biased towards professional services. A software product vendors failure to secure *new* license fee revenue will automatically bias the ratio towards the on-going service support fees.

The principal directions that software product vendors are likely to take in the 1990's include:

- An emphasis on expanding marketing channels through alliances and marketing agreements.
- An attempt to establish architectures and application platforms.
- Increasing emphasis in the development of supporting services.

Information services vendors of all types are increasingly entwined with each other in joint marketing, alliances and consortia designed to optimise their access to business opportunities. Software product companies represent a very real threat to professional services companies where they retain the control over the software product platform.

Consequently we will observe increasing emphasis on the development and marketing of those platform that define how systems are operated and how applications are used.

Software product companies can be expected to move aggressively into competition with professional services firms in developing systems integration and other related services.

H Information Companies

Certain organisation, notably Reuters, Telerate and Dun and Bradstreet, are fundamentally oriented to the provision of *business information services*. They use information technology as the supporting mechanism for these business information services and as a result have entered adjacent information services markets.

This type of company will not present a competitive threat to Andersen Consulting unless they undertake a dramatic change in direction. The principal reasons for this are:

- Their heritage.
- Their low degree of commitment to the information services business.
- Their emphasis on *business services* not *business operations*.

The heritage of this group of vendors is the provision of a specific set of business services. In the case of Dun & Bradstreet, company credit rating information, in the case of Reuters the support of journalists and newspapers for worldwide news distribution. Reuters became heavily involved in the provision of financial information through computer based networks and grew very rapidly over the last 15 years as a result.

This background does not translate, easily to competing with professional services firms more clearly targeted at meeting client's information systems needs.

This group of vendors involvement in information service has been generally limited to supporting specific areas that are positioned adjacent to their principal business streams. For example, Reuters has become involved in systems integration projects for financial dealing room systems.

Dun & Bradstreet, in contrast, exhibits a wider portfolio of activities. The distribution of its European revenues is as follows:

- | | |
|---------------------------------------|-----|
| • Provision of Business Credit Data | 50% |
| • Directory Publication | 20% |
| • Market Research | 20% |
| • Other Business Information Services | 10% |

Dun & Bradstreet has of course developed a significant software product activity largely through the acquisition of MSA and McCormack and Dodge. Dun & Bradstreet Software generated European revenues of \$82 million in 1990.

However the question must remain, for Dun & Bradstreet, as to whether there really are any significant synergies between its different revenue streams given the wide range of businesses that it covers. Dun and Bradstreet appears to have no commitment to the information services business in terms of the markets addressed by Andersen Consulting.

It is argued elsewhere in this report that a significant opportunity exists to become involved in *business operations* as user needs migrate to higher levels of service offerings through *outsourcing*. The *business services* provided by the *information company* group remain defined at a much more specific level of activity than that of a business operation. Except for some specialised areas it is not expected that these vendors are likely to present a competitive threat in mainstream *systems integration* and *outsourcing* markets.

I Japanese Vendors

The Japanese information technology vendors (the principal ones being NEC, Fujitsu and Hitachi) are not only computer manufacturers but semiconductor and telecommunications equipment manufacturers as well. Specifically Fujitsu and Hitachi have strong product ranges in such areas as robotics and process and production control.

The sheer scale of their operations and their fabled long term market share ambitions make them a formidable competitive threat in the information technology industry. Their potential competitive threat to the information services business is less clear.

The principal challenges being faced by the Japanese system vendors are listed in Exhibit III-11. As a group Japanese vendors face fierce competition amongst themselves, and from some US firms, notably IBM, in their home market. An historical feature has been a high level of co-operation amongst competitors (orchestrated by MITI) to undertake research and development.

In Europe they have attempted to gain market share and position through alliances or by acquisition, for example through:

- Siemens (Fujitsu)
- Olivetti (Hitachi)
- NAS (which became Hitachi Data Systems)
- Bull (NEC)
- ICL/Nokia (Fujitsu)
- Apricot (Mitsubishi)
- SECOINSA (Spanish Fujitsu Operation).

Apart from Fujitsu (represented by a 44% stake in Amdahl as well as its 80% stake in ICL/Nokia), the Japanese share of the European market for mainframe and mini-computer systems remains relatively small. It is only Toshiba, a more consumer oriented manufacturer, that has achieved significant penetration of the European Laptop PC market.

To date there has been little evidence of the Japanese companies seeking to penetrate the European information services business. One attempt was however made by CSK, a large independent Japanese professional services company, when they sought to purchase Hoskyns. Although rebuffed by Hoskyns's preference for ownership by CGS it is now understood that CSK is in talks with CGS to explore future possibilities for collaboration.

Exhibit III-11

Principal Challenges

- Market share development - for products and components
- Long term positioning
- Penetration of US market - competitive benchmark of US
 - Europe big but secondary focus
- Development of software impeded by:
 - Wide use of primitive methods
 - Severe shortage of skilled staff
- Access to low cost finance becoming an issue
- Continuous improvement of production economies of scale and methods
- Develop marketing channels through acquisitions

It has been a common view to write off the ability of Japanese companies to develop software. This can be attributed to their heavy emphasis on the use of assembler code despite the fact that Japanese companies generally face great difficulties in recruiting skilled staff. Although there have been significant efforts to develop advanced software production methods (eg. the Fifth Generation Computer Systems plan and the setting up of ICOT, Institute for New Generation Computer Technology in 1982) the Japanese are generally considered to be behind the state of the art in terms of their use of software development methodologies. Japanese companies' commitment to software development is also underlined by their heavy investment in *software factories*, see Exhibit III-12.

However, the Japanese companies commitment to the provision of services seems limited in general to that of supporting specific products. ICL's joint venture with SORBUS was not a Fujitsu initiative, Fujitsu apparently required considerable persuasion to get them to accept that it was worthwhile to strengthen ICL's services portfolio through this particular alliance.

Exhibit III-12

Principal Japanese Software Factories

Company	Name	Development Activity	Number of Personnel	Year Established
Hitachi	Hitachi Works	System Software	5,000	1969
NEC	Software Strategy Project - Separate factories Telecommunications software	System Software Application Software	9,500	1976
Toshiba	Fuchu Software Factory Software	Industrial Control	2,300	1977
Fujitsu	Systems Engineering Group Software	Applications	5,500	1979
Fujitsu	Numazu Software	System Software	3,000	1988
Hitachi	Systems Design Works	Application Software	12,000	1985

IV The Information Systems Industry Scenario - 1990's

This chapter describes an industry scenario derived from an analysis of expected changes in market demand for both information systems and services. It examines the impact of the various competitor groups described in Chapter III and the resulting competitive positioning anticipated for 1995. The analysis is set out in the following format:

- Section A describes the competitive scenario for 1995.
- Section B describes the expected overall direction of the market over the next five years, the forecast growth for the principal sectors of the IT market and the likely impact of different categories of vendors.
- Section C describes individual company growth projections used to develop the overall market scenario described in Section A.

A Information Technology Competitive Scenario

This section examines the projected competitive market scenario for the mid 1990's. It embodies the individual vendor projections that are discussed in section C below. It is necessary to first define the 1990 baseline for these projections.

Exhibit IV-1 shows INPUT's assessment of leading vendor positions for the total computer services industry in 1990. As can be seen from the exhibit this vendor ranking is based on the total services revenues as presented by system vendors, thus it includes equipment maintenance and system software product revenues.

From the perspective of Andersen Consulting a more realistic competitive ranking can be compiled by excluding the *equipment maintenance* and *system software product* revenues that are separately analysed in Exhibit IV-1. The ranking for *other software and services* is shown as Exhibit IV-2.

Two scenarios are developed below based on different assessments of growth in demand for *outsourcing* services in Europe:

- Market Scenario One assumes only evolutionary growth.
- Market Scenario Two assumes more dramatic market demand for these services.

Exhibit IV-1

European Computer Services Industry
Leading Vendors 1990

Rank	Vendor	\$ Billions			
		1990 Revenue	Equipment Mtce	System Software Products	Other Software & Services
1	IBM	7.8	2.9	2.7	2.2
2	Digital ¹	2.8	1.4	0.8	0.6
3	SNI	2.3	1.3	0.4	0.6
4	CGS	1.7	-	-	1.7
5	Bull	1.7	0.9	0.4	0.4
6	Olivetti	1.5	0.9	0.1	0.5
7	Reuters	1.4	-	-	1.4
8	EDS ²	1.3	-	-	1.3
9	Unisys	1.3	0.6	0.3	0.4
10	ICL ³	1.3	0.6	0.2	0.5
11	NCR	0.9	0.7	0.1	0.1
12	Hewlett-Packard	0.8	0.5	0.2	0.1
13	Andersen Cons.	0.7	-	-	0.7
14	Microsoft	0.7	-	0.4	0.3
15	Sema Group	0.6	-	-	0.6
16	Finsiel	0.6	-	-	0.6
17	CA	0.6	-	0.2	0.4
18	Sligos	0.5	-	-	0.5
19	Debis Systemhaus	0.5	-	-	0.5
20	Oracle	0.4	-	0.3	0.1

Footnotes to Exhibit IV-1:

- 1 Digital includes the 1990 revenues of Kienzle, Philips mid-range systems division and Alcatel
- 2 EDS includes GM derived revenues and those for SD-Scicon
- 3 ICL includes Nokia and SORBUS.

Exhibit IV-2**European Information Services Industry
Leading Vendors 1990**

Rank	Vendor	Revenues \$ Billions
1	IBM	2.2
2	CGS	1.7
3	Reuters	1.4
4	EDS	1.3
5	Andersen Consulting	0.7
6	Digital	0.6
7	SNI	0.6
8	Sema Group	0.6
9	Finsiel	0.6
10	Olivetti	0.5
11	Sligos	0.5
12	Debis Systemhaus	0.5
13	ICL	0.5
14	Bull	0.4
15	Unisys	0.4
16	CA	0.4
17	Axime	0.4
18	Datev	0.4
19	Volmac	0.4
20	GSI	0.3

1. Market Scenario One

Using the future growth assumptions developed for the individual leading competitors to Andersen Consulting, as described in Section C below, we can derive forecasted competitive ranking tables for an evolutionary growth scenario.

Exhibit IV-3 shows the 1995 industry ranking scenario in the same format as Exhibit IV-1. Exhibit IV-4 shows the 1995 industry ranking scenario in the same format as Exhibit IV-2.

Exhibit IV-3

European Computer Services Industry
Leading Vendors 1995

		\$ Billions			
Rank	Vendor	1995 Revenues	Equipment Maintenance	System Software Products	Other Software & Services
1	IBM	11.5	3.2	4.7	3.6
2	CGS	5.2	-	0.1	5.1
3	Digital	4.9	1.5	1.4	2.0
4	SNI	4.3	1.4	0.7	2.2
5	EDS	2.7	-	-	2.7
6	ICL	2.7	0.8	0.4	1.5
7	Bull	2.5	0.9	0.8	0.8
8	Olivetti	2.4	1.1	0.2	1.1
9	Andersen Consulting	2.3	-	-	2.3
10	Reuters	2.3	-	-	2.3

Exhibit IV-4

1995 Scenario

European Information Services Industry

Rank	Vendor	Revenues \$ Billion
1	CGS	5.1
2	IBM	3.6
3	EDS	2.7
4=	Andersen Consulting	2.3
4=	Reuters	2.3
6=	Digital	2.0
6=	Sema & Volmac	2.0
6=	Debis Systemhaus	2.0
9	SNI	1.7
10=	Finsiel	1.5
10=	ICL	1.5

The individual assumptions made about the market and the vendors to formulate this scenario are set out in more detail in Sections B and C of this chapter. However it is helpful to highlight here the key factors that have contributed to this particular forward view of the market:

- That an evolutionary rather than revolutionary scenario has been assumed for the *outsourcing* market.
- That CGS continues to make acquisitions that drive its revenue growth at a rate significantly above that expected for the whole market.
- That EDS continues to make acquisitions sufficient to grow its total revenues at just above expected market rates to compensate for lower growth in its captive business and from the recently acquired SD-Scicon base.
- That Digital and SNI both make acquisitions sufficient to at least maintain their current overall revenues despite forecasted declines in systems sales.
- That there is at least one major merger between two independent services vendors, the assumption made in this scenario is that Sema Group and Volmac combine.
- That Andersen Consulting maintains an above industry average growth rate of 26% per annum organically.

It is evident from Exhibit IV-4, based on the above set of relatively conservative assumptions, that Andersen Consulting's prime competitors will continue to be the leading system vendors, IBM, Digital and SNI, and the leading service companies CGS, EDS, Sema and Volmac and Debis Systemhaus.

The system vendors, as is evident from Exhibit IV-3, will continue to claim significant *total service* revenues but will rely on equipment maintenance and system software product revenues to generate a significant proportion of them.

It is of course plausible to consider some more radical restructuring amongst the leading vendors, for example there must exist the real possibility that CGS and Debis Systemhaus will merge in the course of the next five years. It is also possible that Olivetti Information Services (OIS) might become part of this group as well. CSC is another company that has the potential through acquisition to obtain access to a leading position in Europe.

However such restructuring, based upon the CGS/Debis axis or some other focal point eg. Volmac, Finsiel, OIS or the Sema Group, does not materially alter one basic observation. That observation is that the leading positions in the industry are already well staked out and that it would require a very radical agglomeration amongst the second rung service companies (eg. Sligos, GSI etc.) to create any new significant threat to Andersen Consulting at the top level of the industry.

The above analysis recognises the potential competitive threat from three of the vendor groups identified and discussed in Chapter III, namely system vendors, vendors whose primary business is software and services and Information Services subsidiaries.

As discussed in Chapter III, the Telecommunications Organisations, the other Big Six Accounting Firms, the Strategic Consultancies and the Information Companies are not considered to present a significant threat to Andersen Consulting overall. It needs though to be recognised that they may present a threat in specialised sectors or market niches.

This leaves two remaining groups of vendors, Software Product Vendors and Japanese vendors whose potential as competitive threats needs to be considered.

Computer Associates, Microsoft and Oracle all appear in the list of leading vendors shown in Exhibit IV-1. Each one of these has the potential to present a significant threat to Andersen Consulting in its existing revenue streams.

Likewise the Japanese vendors have to be considered a medium and long term threat to Andersen Consulting. The Japanese vendors are gradually building alliances through share ownership, Fujitsu with ICL, Hitachi with EDS and Nippon Steel with Oracle for example.

2. **Market Scenario Two**

Using the assumptions developed for the individual leading competitors to Andersen Consulting, as described in Section C.7 below, we can forecast competitive ranking tables for a scenario that predicts dramatic demand increase for outsourcing services. Exhibit IV-5 shows the industry ranking scenario in the same format as Exhibit IV-2.

Exhibit IV-5
Outsourcing Impact 1995 Scenario

RANK	VENDOR	REVENUES (\$ BILLIONS)
1.	CGS	6.4
2.	EDS	4.4
3.	IBM	4.2
4.	Andersen Consulting	3.0
5.	Digital	2.4

In this market scenario there clearly exists a huge potential to gain a significant market position through aggressive pursuit of outsourcing opportunities. Key to this market will be the recognition of the in-house information systems function as the prime competitive threat. In particular it offers a unique opportunity to Andersen Consulting, because winning outsourcing contracts is in effect an alternative to an acquisition policy. The *acquisition* of in-house information systems functions offers the potential to overcome the two key objections to acquiring other vendors:

- Paying too high a price.
- Absorbing the acquired company's culture.

It is clear from the competitive rankings shown here that a considerable competitive threat exists, in terms of revenue generation, by not pursuing this particular opportunity. In the case of this scenario Andersen Consulting would significantly lag the industry in terms of overall growth and would thus lose ground to significant competitors if it did not participate in the *outsourcing* market.

The even more radical scenario for the development of the *business operations* outsourcing market is not analysed numerically here. However similar observations apply. Given Andersen Consultings proven willingness to take on this kind of control (ie. the recent BPX contract) it is facing a considerable competitive opportunity.

The only other information services company of the scale of Andersen Consulting that has demonstrated an interest and capability to recognise and handle *business operations* is EDS.

B Evolving User Needs

1. Market Structure

The product dominated industry of the past is rapidly changing to one dominated by services. INPUT considers that there exists the real possibility that the market could change even more fundamentally in the future were user needs for information services to manifest themselves as requirements for *business functions* rather than for *information systems* functions.

The long term trends that are indicating this possibility can be summarised as:

- Business transition needs
- IT re-engineering needs
- Outsourcing needs.

The need for business organisations to restructure and undergo a radical transformation in the 1990's has been commented upon by management experts. It is also now clearly visible in the marketplace as companies seek to make radical staff cuts and to remove management levels, often by one-third or more. Management experts are forecasting that business will undergo more radical re-structuring in the 1990's, than at any time since the modern corporate organisation first evolved in the 1920's. The restructuring of corporations - middle sized ones as well as large ones, and eventually even smaller ones - has barely begun.

The re-engineering of user's information systems requirements is being driven by rapid technological development in increasingly more open competitive market conditions. The steady rate of cost performance improvement of the past, when competition was dampened by the *imperfect markets* that system vendors had established over their proprietary customer bases, is giving way to a much higher rate of cost performance improvement. This is partly due to the rate of technology advance itself but is much enhanced by the *open systems* environment which implies:

- Standards for the portability of software eg. UNIX.
- Standardisation of computer systems themselves, which allows for software products to run on all classes of the same system eg. MS-DOS and Windows.
- Standards for communications.

These developments have beget the potentially revolutionary impact of *downsizing* and *networking* loose on the old systems design architectures of the past.

Outsourcing is manifesting itself as a concept not just in respect of information systems (to-date the systems operations or facilities management contract) but for entire business functions. This potential unbundling of the corporation is propelled by the parallel impact of:

- The need to concentrate scarce management resources on the critical value-added core business elements.
- The need to offer opportunities for advancement into professional and senior management positions to personnel engaged in activities that are not critical or core to the business.

The combination of these long term trends on the information systems and services markets are summarised in Exhibit IV-6. This exhibit encapsulates the following historical trend characteristics:

- From the development initially of products towards the development of service products.
- From the platform of products and service products towards the development of *higher level* services in which the vendor takes *project* responsibility or *process* responsibility (outsourcing).

Although some vendors have offered these services for some time the significance is in the degree to which these buying modes are needed and accepted in the market in the face of increasing system complexity, as well as time and financial constraints.

Exhibit IV-6

Information Systems and Services - Market Scenario

PROJECT RESPONSIBILITY SERVICES	OUTSOURCING
<ul style="list-style-type: none">- Systems Integration- Systems Development	<ul style="list-style-type: none">- Systems Operations- Network Operations- Applications Management- Desk-Top Support Services
SERVICE PRODUCTS	
<ul style="list-style-type: none">- Consultancy- Professional Services- Training and Education	
PRODUCTS	
<ul style="list-style-type: none">- Equipment (Computers and communications)- System Software Products- Application Software Products	

The implications for vendors of information systems and services are potentially dramatic. Vendors need to assess at which level of the market they plan to operate and whether to address product, service product, *higher level responsibility* service markets or some combination of these.

Fundamentally vendors need to assess whether they are:

- Technology companies
- Information Systems companies
- Business Services companies.

Companies that concentrate on the development and marketing of technology products or the packaging of technology as standard information systems solutions are unlikely to be able to develop a true dedication to the provision of business process services.

2. **Market Forecast**

Exhibit IV-7 shows INPUT 's estimate for total Western European IT user expenditure. As for the analysis described above in Section A, *systems software products* and *equipment maintenance* are identified separately, all other services (including applications software products) are grouped under the *services* sector.

Exhibit IV-8 shows an analysis of the total estimated level of user expenditure including internal spend on staff and facilities.

Exhibit IV-7
Western European Information Technology Market

	User Expenditure \$ Billions		
Sector	1990	1990-1995 CAGR (Percent)	1995
Services	50	+ 15%	102
System Software	11	+ 12%	19
Equipment Maintenance	15	+ 2%	16
Systems	65	-7%	45
Sub-total	140	+ 6%	185

Exhibit IV-8

Western European Information Technology Market

	User Expenditure \$ Billions		
Category	1990	1990-1995 CAGR (Percent)	1995
External Expenditure	140	+ 6%	185
In-house Staff	65	+ 4%	80
Facilities including Data Transmission	30	+ 3%	35
Total	235	+ 5%	295

However the analysis shown in Exhibits IV-7 and IV-8 implies only moderately fast growth in systems operations services, (20% CAGR). Below we develop a more dramatic scenario for the expansion of this sector. To do this we have made a number of assumptions as follows about the 1995 outsourcing market scenario:

- Approximately 70% of all user expenditure is from large sites.
- It is only from these large sites that outsourcing take place. (Conservative assumption).
- By 1995 20% of these large sites outsource 80% of their systems expenditure.
- Outsourcing represents a cost saving over existing forms of expenditure of approximately 10%.

Exhibit IV-9 uses the same format as Exhibit IV-8 but separately identifies outsourcing expenditure in applying the assumptions described above.

Exhibit IV-9

Potential IS Outsourcing Market - Western Europe

CATEGORY	User Expenditure \$ Billions		
	1990	1990-1995 CAGR (Percent)	1995
External Expenditure	138	+3	160
Outsourcing	2	+72	30
In-House Staff	65	+1	70
Facilities inc. Data Transmission	30	-	30
TOTAL	235	+4	290

A comparison between Exhibit IV-9 and Exhibit IV-8 clearly highlights the dampening effect this scenario would have on total user budgets and the dramatic high-growth opportunity available to vendors that address the outsourcing market.

If we further consider the possible opportunity to outsource entire business functions, within which the information systems are embedded, then we are facing a potentially huge market. If we assumed that the business functions market applied to only 5% of all outsourcing contracts by 1995, and that it effectively increased the size of contracts by 50% (possibly a conservative assumption) then an additional potential of \$750 million in user expenditure could be generated.

3. Impact on the Industry Environment

In this section we review the impact of the market forces on the competitive environment using the Porter analysis model. This analysis is encapsulated in the Porter diagram shown as Exhibit IV-10 which focuses on Andersen Consulting's prime current markets of professional services and systems integration.

Exhibit IV-10

Forces Driving Industry Competition - Porter Analysis Model

Threat of New Entrants <ul style="list-style-type: none">• Experience barrier• Scale barrier		
Bargaining power of suppliers <ul style="list-style-type: none">• Software product platforms<ul style="list-style-type: none">- systems- applications	Rivalry amongst existing firms <ul style="list-style-type: none">• Emergence of leading vendor group• Middle sized firms squeezed	Bargaining power of buyers <ul style="list-style-type: none">• Open systems• Large corporate IS threat
Threat of substitute products and services <ul style="list-style-type: none">• Outsourcing• New Software Technologies		

a. Internal Industry Rivalry

High industry growth has in the past acted as a governor of fierce rivalry between firms in the information services business. However two trends counteract this:

- Increasing fragmentation creates highly competitive positions for medium sized firms that are not able to compete on niche competence or low overheads.
- Emergence of a dwindling band of really significant players at the top end that compete on breadth, depth and scale of their resources and expertise.

b. Bargaining Power of Buyers

Buyers can place competitive pressure on an industry by forcing down prices, bargaining for higher quality or more services, and playing competitors against each other - all at the expense of industry profitability.

Historically expenditure of companies on information systems was relatively low as a proportion of their overall costs. As expenditure has increased so buying pressure on vendors has increased. Financial performance (profitability) is also a factor, as is shown by the recessionary impact on the industry.

The more that products and services are standard or undifferentiated the higher the level of buyer power. Open systems and de facto standards like MS-DOS have considerably increased buyer power in certain IT markets.

Switching costs for customers is another key determinant of buyer power. So called perfect markets exhibit zero switching costs and high levels of buyer power, eg. IBM compatible PC's. In contrast outsourcing switching costs, switching between outsourcing vendors, could be relatively high.

Backward integration is a potentially important bargaining lever for the buyers. This is the classic *make* or *buy* decision that affects the information services business. Where a user retains some information services capability then the threat to *insource* may be a bargaining pressure point on the outsourcing vendor. Internal detailed knowledge of industry costs on the part of the buyer is a great aid in negotiation.

Increasing buyer power at the lower end of the services spectrum has been balanced by decreasing buyer power at the higher end. The complexity and level of integration of many information systems within an organisation has driven the demand for consultancy advice and professional assistance to plan, design, build and operate them. This has brought two key groups of vendors into contention in the information services industry, the Big Six accounting firms and the Strategic Management Consultancies.

The real competitive threat to Andersen Consulting, if it pursues the outsourcing market vigourously, will be from the in-house information systems operation. This will be particularly important for large corporations that have developed very substantial internal experience and scale enabling them to actually enter the market as has Debis Systemhaus.

c. The Bargaining Power of Suppliers

Suppliers can exert bargaining power over participants in an industry by threatening to raise prices or reducing in some way the quality of purchased goods and services. Powerful suppliers can squeeze profitability out of an industry unable to recover cost increases in its own prices. Apple for example suffered this experience over its sourcing of microprocessors.

Supplier group power is influenced by the following factors:

- Supplier power is increased where it is dominated by a few companies and is more concentrated than the industry it sells to. For example the power of Microsoft over the IBM-compatible PC industry.
- If the suppliers product is an important input to the buyers business then the suppliers power is increased. Intel's leverage in the PC business.
- If the supplier poses a credible threat of forward integration then this provides a check against the industry's ability to improve the terms on which it purchases.
 - Intel manufacturing PC's for DIGITAL is a threat.
 - IBM manufacturing an Intel 386 clone, a threat in the opposite direction.

Software and services firms and consultancies can be *suppliers* to equipment manufacturers for major project implementations. This is an argument for IBM desiring that the software and services industry remain fragmented in order that it can still retain significant control over its customers.

Software product vendors are potentially an important supplier group to the *solutions implementation* business. Equipment manufacturers have for some time sought to influence and control the software products vendor through VAR and related distribution channels - note IBM's investment in many of these companies and Digital's cooperative marketing agreements.

Now there is a need for professional services firms as well to find software products as *solution platforms* for market access and differentiation. These *solution platforms* maximise replication whilst still delivering a customised solution to the client.

d. Threat of Substitute Products and Services

There are two principal substitutional threats to Andersen Consulting's competitive position, from *outsourcing* and from new technological software developments.

Outsourcing changes the buying channel and thus potentially threatens existing client relationships and service delivery channels. If *outsourcing* really develops as a significant sector of overall user expenditure then vendors that do not offer these services themselves are threatened by the creation of barriers to their traditional markets.

New technology for software development (eg. Object Oriented Programming systems) have the potential to substitute for the existing methods and products used to support project development.

e. Threat of New Entrants

The threat of entry into an industry depends on the *barriers to entry* that are present coupled with the reaction from existing competitors that the entrant can expect. If barriers are high and/or the newcomer can expect sharp retaliation from entrenched competitors, the threat of entry is low.

As far as Andersen Consulting's markets are concerned *experience* and *economics of scale* are probably the key barriers to entry. These are major barriers to medium sized firms attempting to compete in major project contracting markets. SD-Scicon, for example, failed to transcend these barriers and became financially weakened which led to its being acquired by EDS in a hostile takeover.

Large scale SI contracting demands that the vendor have the financial resources to absorb the risk associated with the development. For example the choice of IBM as prime contractor for the recently awarded \$1.5 UK MOD helicopter contract. IBM was awarded the contract (a 2% management fee) on the credentials of having project managed a similar development for the Pentagon (*experience*) and their financial *scale*.

The group of vendors not discussed separately, but listed here, is that of *engineering companies*, for example GEC and Thomson. These organisations must potentially offer a competitive threat to the information services industry. Some of these vendors are represented elsewhere eg. Siemens by SNI, Daimler Benz by Debis Systemhaus and the Japanese companies.

Others have subsidiary companies eg. SYSECA in France is owned by Thomson a company involved in high end computer modelling on workstations.

The Sema Group have recently formed a jointly owned company with British Aerospace, BAe SEMA, to overcome barriers to their continued access to significant software development contracts in the defence sector.

C Competitive Vendor Scenarios

This section describes the forecast scenario developed for Andersen Consulting and its leading industry competitors. Andersen Consulting's four largest competitors in the information services business are discussed in separate sections below followed by a brief review of other significant scenario assumptions.

All the forecast revenue scenarios discussed in this section are for the European market only.

1. Andersen Consulting

The forecast scenario for Andersen Consulting's revenue development over the period 1990-1995 is set out in Exhibit IV-11 based upon INPUT's analysis for the base calendar year 1990.

It has been assumed that all growth is organic and that there are no acquisitions of other vendors. However, it is possible that Andersen Consulting might acquire information services subsidiaries as a method of developing their outsourcing business.

The assumption is made that Andersen Consulting can maintain a five year compound average growth rate of around 25% per annum which is in line with its historic performance.

Exhibit IV-11

Andersen Consulting Europe
Revenue Forecast

	\$ Millions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems Software Products	20	20	50
Application Software Products	15	27	50
Professional Services	360	20	900
Systems Integration	300	30	1,100
Systems Operations	25	40	150
Total	720	26	2,250

2. IBM

The forecast revenue development of IBM Europe over the period 1990-1995 is shown in Exhibit IV-12. The impact of downsizing and continuing weak markets for computer system products are forecast to reduce IBM's European equipment revenues significantly by 1995. Growth in equipment maintenance services is expected to be marginal with at least double digit growth in software products and other services. The scenario shown here is based on the assumption that IBM will not be able to grow its professional services revenues at more than 10% per annum.

The assumption has also been made that IBM undertakes no acquisitions where revenues are consolidated into its accounts.

Another scenario for IBM would be to assume an aggressive pricing strategy that led to:

- A greater than industry average fall in system revenues
- A greater than industry average growth in system software product revenues.

It is also possible to speculate that truly separate outsourcing and systems integration companies would be able to increase their revenues at a greater rate than if remaining integral divisions of IBM's operations.

Exhibit IV-12

IBM Europe
Revenue Scenario

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	18.2	-9	11.5
Equipment Maintenance	2.9	+ 2	3.2
Systems Software Products	2.7	+ 12	4.7
Services	2.2	+ 10	3.6
Total	26.0	-2	23.0

3. Cap Gemini Sogeti

The forecast revenue development of Cap Gemini Sogeti over the period 1990-1995 is shown in Exhibit IV-13. The principal assumptions in this scenario for CGS are the following:

- It will remain independent of control by Debis Systemhaus except in Germany but will be financed by major organisations in both the United States and Japan. These interests will serve to enhance its global ambitions and provide it with finance for further acquisitions.
- A continued acquisitions programme. Over the past decade CGS has maintained an active acquisitions campaign that has contributed to achieving a compound annual growth rate over the last five years of around 40%.

Exhibit IV-13

CGS Europe
Revenue Forecast

	\$ Millions		
Revenue Category	1990	1990-1995 CAGR Percent	1995
Systems Software Products	35	11	60
Processing Services	40	-	10
Application Software Products	65	15	130
Professional Services	1,000	10	1,600
Systems Integration	350	20	900
Systems Operations	160	25	500
Sub Total	1,650	14	3,200
Acquisitions	-	-	1,900
Total	1.7	25	5,100

4. EDS

For the purpose of this analysis no distinction is made between EDS's captive (GM) revenues and those derived from the open market. The advantages that EDS's total scale of operations confers are significant competitive factors for Andersen Consulting.

To this end the revenues derived from SD-Scicon (acquired during 1991) are included in order to present EDS's realistic competitive positioning.

The revenue development scenario for EDS is shown in Exhibit IV-14 which includes the assumption that EDS will make a number of significant acquisitions during the forecast period.

The relatively low quality of the SD-Scicon business (fragmented, diverse activities of which a number are unprofitable) leads to the assumption that this base can only be grown at a rate below that for the industry overall.

The defined limits of the GM organisation also leads to the assumption that EDS's captive revenues will grow less quickly than the overall market for information services.

Exhibit IV-14

EDS Europe
Revenue Forecast

	\$ Millions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Captive Revenues (GM)	650	8	950
EDS Non Captive Revenue	220	20	550
SD-Scicon	410	10	650
Sub-Total	1,280	11	2,150
Acquisitions	-	-	550
Total	1,280	16	2,700

5. Digital

The forecast revenue development of Digital Europe over the period 1990-1995 is shown in Exhibit IV-15. This revenue analysis has been developed to include the historical impact of Digital's recent acquisitions (Kienzle from Mannesman and Philips minicomputer activities) on Digital's 1990 revenue streams.

Since Digital has already embarked upon an acquisition programme it has been assumed that this will continue over the next five years. The scenario in Exhibit IV-15 underlines the motivation to do this in order to achieve some overall revenue growth by 1995. The assumption has been made that all acquisitions made in the future will have no impact on the systems sales revenue stream for Digital.

The scenario shown in Exhibit IV-15 indicates that without acquisitions total service revenue would account for just over 60% of total revenues in 1995 and with an additional \$0.8 billion of acquired services revenue just over 65% of total revenues.

Exhibit IV-15

**Digital Europe
Revenue Forecast**

	\$ Billions		
Revenue Category *	1990	1990-1995 CAGR (Percent)	1995
Systems	4.1	-9	2.5
Equipment Maintenance	1.4	+2	1.5
Systems Software Products	0.8	+12	1.4
Services	0.6	+15	1.2
Sub-Total	6.9	-1	6.6
Acquisitions	-	-	0.8
Total	6.9	+1	7.4

* *Includes historical impact of the acquisition of Kienzle and Philips minicomputer activities on Digital's 1990 revenue base.*

6. Other Vendors

Exhibit IV-16 shows the anticipated development of SNI's revenue streams over the period 1990-1995. To maintain its overall revenue position in dollar terms SNI would need to maintain industry average growth rates for all of its principal revenue streams as well as undertake significant acquisitions. These acquisitions would need to generate one billion dollars in revenues in 1995 to achieve this aim.

Exhibit IV-16

SNI Europe
Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	4.5	-9	2.5
Equipment Maintenance	1.3	+2	1.4
Systems Software Products	0.4	+12	0.7
Services	0.6	+15	1.2
Sub Total	6.8	-1	5.8
Acquisitions	-	-	1.0
Total	6.8	0	6.8

Exhibits IV-17 through to IV-20 show the revenue forecast scenario for Olivetti, Bull, Unisys and ICL. The ICL scenario incorporates the acquisition of Nokia Data and the revenues from the joint-venture company SORBUS Europe. Further acquisitions have only been assumed in the case of ICL.

Exhibit IV-17

Olivetti Europe - Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	3.8	-9	2.4
Equipment Maintenance	0.9	4	1.1
Systems Software Products	0.1	15	0.2
Services	0.5	17	1.1
Total	5.3	-2	4.8

Exhibit IV-18

Bull Europe - Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	2.8	-9	1.7
Equipment Maintenance	0.9	-	0.9
Systems Software Products	0.4	15	0.8
Services	0.4	15	0.8
Total	4.5	-1	4.2

Exhibit IV-19

Unisys Europe - Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	1.6	-13	0.8
Equipment Maintenance	0.6	3	0.7
Systems Software Products	0.3	15	0.6
Services	0.4	12	0.7
Total	2.9	-1	2.8

Exhibit IV-20

ICL Europe - Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Systems	2.4	-8	1.6
Equipment Maintenance	0.6	6	0.8
Systems Software Products	0.2	15	0.4
Services	0.5	12	0.9
Sub Total	3.7*	-	3.7
Acquisitions	-	-	0.6
Total	3.7*	3	4.3

* Incorporates the acquisition of Nokia (\$1.3B in 1990) and SORBUS Europe (\$0.1B in equipment maintenance).

The revenue development scenario for the Sema Group is shown in Exhibit IV-21. The scenario shown here assumes that the company acquires or merges with another significant European information services vendor, the assumption here is Volmac. For this to come about then CGS's 27.7% holding in Sema Group would be an issue. However, with CGS's alliance with Debis Systemhaus and the ever present need for capital to fund an aggressive acquisition programme, it is possible to imagine the liquidation of this investment.

Exhibit IV-21

Sema Group Europe
Revenue Forecast

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Sema Group	640	17	1,400
Volmac	360	11	600
Total	1,000	15	2,000

Exhibit IV-22 lists the revenue forecast scenario for the other leading information services organisations that affect the 1995 ranking. A forecast for CSC is also included to indicate the size of the task involved for this particular company to come into competitive contention as a leading European vendor. The assumption has been made that it will only be able to absorb sufficient acquisitions to achieve a 20% CAGR through to 1995.

It is assumed that Debis Systemhaus will undertake an aggressive acquisition programme and that both Finsiel and Sligos will effect significant acquisitions to grow their business at above the industry average rate.

Exhibit IV-22
European Revenue Forecasts
- Other Services Vendors

	\$ Billions		
Revenue Category	1990	1990-1995 CAGR (Percent)	1995
Reuters	1.4	10	2.3
Finsiel	0.6	20	1.5
Sligos	0.5	19	1.2
Debis Systemhaus	0.5	32	2.0
CSC	0.2	20	0.5

7. Competitive Vendor Rankings - Outsourcing

Exhibit IV-23 shows the assumed vendor rankings for the *outsourcing market* defined for Market Scenario Two. This scenario only assumes the development of the *information systems* outsourcing opportunity not that for *business operations*.

Exhibit IV-23

1995 Outsourcing Market - Competitor Rankings

RANK	VENDOR	FORECAST 1995 REVENUES \$ BILLION
1	EDS	2.4
2	CGS	1.8
3	Andersen Consulting	0.9
4	IBM	0.6
5	Digital	0.5

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